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BUREAU OF BIOLOGICAL SURVEY

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FIELD DIARY

Mr. Vernon Bailey

(Official title.)

Period, May 6 to June 10, 1929

Grand Canyon, Ariz

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May 4 Reached Grand Canyon from Flagstaff 5 PM, after pleasant morning and lunch party with the Coltons at Flagstaff.

Found Mr. Pitzo, asst. Supt. of Park in charge during Mr. Tillitsons absence.

Arranged for conference in morning & went to El Tovar Hotel. Found Mc Kee and Brooks and some of the old rangers.

Mapped life zones from Williams to Grand Canyon more carefully than ever before and along auto road past Red Butte.

Hot and dusty outside, still and cool in woods near Canyon.

Early spring and little green.

May 7. Held long conference with acting Supt. Pettis and Head ranger Brooks and Park Naturalist McKee and arranged for trip down to bottom of Canyon early in morning. Repacked outfit and sent baggage to packer for the early morning mule train.

Lots of birds and squirrels and a dozen deer among the cabins and camps where they get food and water and are safe and tame.

May 8. With 3 mules and one saddle horse we started down the Kaibab trail and reached Phantom Ranch early in afternoon passing from cool spring with no flowers and little green and bare oak branches at the top to early summer in bottom of canyon, hot and dry but Agave utahensis and Yucca baccata and ~~[illegible]~~ bailey; in blossom and most of the species of cactus and many of the other flowers out. Leaves full grown on the cottonwoods and mesquites and the mesquites in full flower. Peaches nearly half grown.

Bats numerous in evening.

One Myotis pale californicus secured.

May 9. Down to mouth of Bright Angel Creek and thence down the river about a mile, as far as one can go.

Got a Chuckwalla & ~~and~~ ~~two~~ more.

Set traps in morning but a high wind spoiled the night.

The Finleys & Packs came in afternoon.

Hunted bats but too much wind.

Cool in morning. Hot in afternoon. Windy in evening

May 10. Caught only a few Peromyscus out in the rocks but none in the tent where Basogiseus tracks were fresh.
Bats flew till after sunrise.
Hummingbirds not so conspicuous as yesterday morning.
Too windy.

May 11. Got more bats but all of the little californicus type. Set traps but got only Microtus drevistomus & Peromyscus

May 12. Got a Spilogale & a sick squirrel alive & kept both, also have a live Myotis californicus in the tent house that is getting tame & eats and drinks well.

Indian camp on peak about 500 feet above rock house at mouth of Bright Angel Creek, a level place with walls part way around it. Old Metate & grinding stone & lot of very old pottery.

Looks down on both sides of ridge & creek & river. May be a safe retreat or look out but seems like the usual mountain top after all is where the sun first strikes in the morning

May 13. Got Neotoma desertorum and 3 species of Peromyscus of the desertorum, crinitus and rowleyi groups.

Caught a blue rock squirrel but let it go.

Photographed tracks of Cremidophorus & Toads and gray fox and then a flowering plant of Gurea halimani.

Saw the first canyon wren.

Mesquites are in bloom and very fragrant. Cactus & Agave and yuccas in bloom. Datura very fragrant.

May 15. Left Phantom Ranch after noon and with Elwin McOtter Jim Brooks & a ranger went up to Roaring Springs and slept all night at the trail workers camp just west of Roaring Springs.

Upper Sonoran Zone really begins at Cottonwood Camp where the little live oak (O. wislizeni) manzanita Cowania & Fallugia begin in abundance at the bottom of the canyon, but juniper & nut pines reach down only to 200 or 300 feet above the Cottonwood Cabins on cold slopes. They come to the level of the Power plant a little above, while a trace of Lower Sonoran runs up this far on hot slopes.

At Roaring Springs a band of Transition Zone species, Gambels oak, Western birch, and an occasional yellow pine follow the

South slope along the spring level apparently owing to seepage by cold water and the great springs pouring out and partly due to the high wall south of the Creek that cuts off a lot of the sunshine.

Beavers have been here at Roaring springs and farther up the creek and left old cuttings. They are said to be further up Bright Angel Cr.

Deer have fresh beds and trails all through the Gambels oak woods and are browsing the oak sprouts.

Shot one Myotis californicus.

Shot a Crotalus confluentis [illegible] at Cottonwood, close to the house where one bit the trail builders little finger a few days ago. Did not hurt him much.

May 14, Roaring Springs & top of Kaibab.

Lots of snowbanks in aspens and balsams above ~~and below~~ the Coconino Sandstone and on north slopes at top of ridge where trail strikes wood.

Aspens just in blossom, no leaves. Oaks bare, no leaves. little vegetation.

Over top of Kaibab much snow, in big drifts in open and north slopes solid snow 2 to 4 feet deep in woods. Water holes full of water, streams running. Hailed + snowed in wide strips, cold. Aspens not started, very little green on bare gravel, some buttercups + a little white aster in blossom.

May 17 Drove southeast of Kanab to Ryan and then south to Big Springs and camped at the ranger station, then drove west down Oak Creek and over onto Slick Rock wash as far west as the road follows it, then south over onto head of Jump up Canyon and walked over a lot of deer ~~range~~ winter range. Where the Cowania and Juniper are badly browsed and even the mut pines show a definite deer-line. The sagebrush is much browsed and the Ephedra mostly eaten up. The oak and Service berry bushes are much browsed — places.

No deer were seen on the winter range but some of the tracks were fairly fresh. Found only 2 dead deer and many more dead cattle.

Back at and near ~~Bonds Rock~~ By Springs we counted 42 deer as we returned in spring. This is intermediat range and the deer are here now on their way back to summer range. It is in the lower edge of yellow pine and gambels oak and the oak are just beginning to show very small leaves, a little grass is up and dandelions are in blossom.

The deer come into the bottom of Nail Canyon for green food in evening and find plenty of water at Rock Springs and at the CIP station a mile north.

All of the deer seen were in good condition except one old doe that looked very rough and bony and with an unnatural tuft.

She may have been very old or sick or just poor. One from looked rough and rather thin but the rest of the 42 deer were in as good condition as any spring deer I ever saw, much better than those on the south rim of the Canyon with plenty of grain to eat all winter.

We rode over many miles of the finest kind of winter range that was practically untouched by deer. No one knows why they do not use it.

Only about 200 cattle have ranged on this part of the forest during the past year when 2-00 used to range but there is not much left for them to eat.

We found water in two tanks, one in Slide Canyon, the

other at Table Rock a little farther north. The water was very muddy and bad but many deer tracks were seen around the edges.

A good growth of Calfilaria covered much of the deer winter range but it had all dried up when they sipped for want of water. The country is very dry.

Amelanchier is in flower on the winter range and one big bunchy cactus with red flowers is out. A few small flowers and two Calochortus gunnisoni were found in bloom.

At Table Rock Corral some 20 or 30 deer had been caught in the cedar post corral fence and killed but the fence has been broken open so they will not

they to jump or get through
in any more.
Mr. W. G. Mann says he has
seen as many as half a dozen
dead deer in a day's horseback
riding over the winter range.

May 18. To Pine Flat Reservoir and hunting camp then over to head of Sawats Canyon to Quadrat No. 2. All transition zone and fine yellow pine forest and gambel oak. Deer come at water holes and some all along, eating oak browse and numerous small plants including Ceanothus macdougli, larkspur, and a little milky juiced Agoseris? taraxacifolia, filaree, young grass and juicy plants so they can stay for a long time on dry ridges with no water for many miles.

Went on to end of ridge south of Sawats Canyon and looked down over it and jump up Canyon into Kaweah Canyon. Then reach around up Indian Canyon to Big Saddle Camp and up to Bee Camp and then over to Dry Valley Fork road & Ranch.

Out all day & covered 62 miles and saw a lot of the winter range of deer which is most intensely grazed along the breaks of Kanab Canyon and numerous deer trails had down into the big flat valley above the steep bottom of Kanab Canyon proper.
Much of the Cowania tal ongdens is killed and all closely browsed and the jumpers and nut pines are trimmed high by deer.
Lots of shed horns all over winter range but only 2 dead deer found on winter range and two on yellow pine intermediate range where they are now. These few dead deer may have been killed by lions or coyotes or shot in open season.

These are no worse than would be expected normally if food were at its best and the 70 or 80 deer seen in the yellow pine country are in as good condition as any deer I ever saw in spring. None seemed very poor or at all weak. All are still in gray winter coat - but in many it is very rough and ragged. The horns of old bucks are often 8 or 10 inches long, wide and clubbed, or in the younger bucks were spikes 4 or 4½ inches long. None of the does showed signs of being heavy with fawn and the fawn season must be well beyond this.

Found much sign of Abert's Squirrel work and saw a few big nests — the big pines. Saw one live squirrel & one dead one. They are common on dry ridges 5 to 10 miles from any water and must get this moisture from food.

Rock squirrels are common at long distances from water, many miles where they can not get any except when it rains which may be at intervals of months.

The same applies to Callospermophilus lateralis and Eutamias Adsitus which are common all through the yellow pines. Three or four of the chipmunks were found off one big yellow pine and probably nesting as one shot was a highly developed old male.

Lions
Cats
Coyotes
Foxes

Found skulls of bobcat, Raccoon and Coyotes at old lion hunters camp on ridge near Sawats Canyon and numerous Coyote tracks and signs along trails, roads and around water holes.
Also droppings made up of mouse and woodrat and rabbit remains.
Some holes were probably made by badgers.
Jack Butler & his companion Adams hunt lions and live at Ryan. They have a fine bunch of lion dogs & a litter of puppies at camp.
Jack has killed 58 lions in the year and a half he has been hunting, mostly in Sawats Canyon but 6 or 8 around Ryan.

Porcupines are fairly common all through the yellow pine and Canadian zones and work out on ridges where they can never get any water unless it should sometime rain but in summer they eat green vegetation and in winter snow.

Saw one Jackrabbit out on point out edge of Kaibab Canyon but failed to get it and saw plenty of signs of Cottontails, even in the Quadrats of the Forest Service. Thousands possible hills are common in higher plateaus in transition zone. No yellow hills below Rock Springs except at Kaibab.

Bobcats & gray foxes are common in the canyons.

Coyote pellets
Abundant on Sowots Point and all over Big Springs country.
Contain mostly -

Deer hairs - in only a few noted
Neotoma - hairs & bones, abu.
Cottontail - " " a few
Perosmyscus - " " abundant
Perodipus - one part of skull

Bird feathers & bones, in several

Saw a Cottopus bonacis and lots of the common birds
Saw Chaetodipus in juniper near edge of Canyon
A Scott oriole yesterday was down near the Canyon of Kanab Creek.
Found Eleagnus rotundifolia common along edge of Canyon.
Got skulls and one skeleton of deer on ridge south of Sowots.
Shed horns are numerous.

May 19. Studied deer pens and traps and gave Mr. W. G. Mann Forest supervisor of the Kaibab Nat. Forest specifications for a small trap to be set in fence or to be baited. Trap 54 inches long, 42 inches high and 16 inches wide, made over frame of 2x2 with rounded inner corner covered with one inch poultry wire and a heavier 3 inch mesh wire over it, wire to surround top, sides and bottom. A one inch board bottom and the two open ends to be closed by drop doors of heavy galvanized iron — grooves when the deer strikes a thread in middle of trap with front legs a breast. A canvas or burlap nailed on top and rolled up on both sides to drop down when the doors drop.

By using bait a smaller trap can be used as the deer will go in one way only & the thread to drop the door can be closer to the far end of the trap.

The same trigger as used on the beaver corral drop gate can be used. The trap should not weigh more than 30 or 40 lbs and can be used for a shipping crate and kept dark so as not to scare the deer.

The local ranger Parks, does much of the trapping.

The present pen method is crude and clumsy and not very effective and the deer are scared and many die. They are forced around from one pen to another and finally into crates. There are several large pens with good grass and dandelions.

May 20. Down Kaibab Trail to Bright Angel Creek at Phantom Ranch. Cephalus and Gambels oaks at top beginning to blossom.

Between Tunnel and Roaring Springs found coppery Sceloporus common in full fading colors and probably mating. One large male collected measures 7 inches in total length, tail 4¼ from anus. Scales rough and very strongly carinate and slender pointed.

Color, fresh, coppery brown over all of upperparts, more olivaceous brown on younger individuals. Lowerparts pearlish gray with brilliant green or bluish green sides, stripes and maxillary spots, bordered medially by black. Another old male is faintly mottled on sides of back and they eyes are silvery yellow or white in a narrow iris ring and large black pupil. Another has pale yellow iris.

Phenology across the Canyon.

The sequence of flowering from top to bottom and bottom to top in crossing the Grand Canyon is a moving picture of rare beauty and interest.

Leaving Bright Angel Point at 8 AM on May 20 we find the aspens just in flowering catkins and dainty green leaves while below a few early Pedicularis are opening their long tubular flowers among purple leaves. and that is all.

Just over the rim as the trail dips down the gambel oaks are showing leaves the size of a squirrel's paw and thin tasselly catkins are coming out but there is little else until we get down a thousand feet below the top where a belt of upper Sonoran begins on sheltered slopes that get more than a fair share of sunshine.

Here a few redbuds show royal purple clouds and a little lower the fringe tree is in full glory of its feathery flowering. The tea bush, Ceanothus, also throws foamy sprays right out to the trail and the thick heavy ~~goos~~ bears big white roses. A few vetches and little yellow mustards and the golden globes of Oregon Grape (Berberis fremontii) give color close to the ground.

Then as we come down below the timber on the trail there are fragrant Cliff rose and syringa among the junipers and nut pines and down by roaring springs the deep red flowers of the bunched cactus and the pink roses of the white spined little prickly pear.

A few blue flax and larkspur give a touch of color among the fragrant junipers and nut pines.

Down at ~~Roaring Spring~~ the Powers house below Roaring Springs a Race of Tower Sorrzan is shown in the big prickly pear ~~with~~ which was not in blossom until near Cottonwood Trail station where this orange and crimson flowers are showing on the warm slopes ~~and~~ with the tall yellow spikes of the ~~Century~~ plants in full bloom. ~~Down~~ at Phantom Ranch both have almost past the flowering stage. Even the mesquites are dropping their yellow catkins tho still beautiful and fragrant. but the gray arrow wood, Pluchea ~~sericea~~, is just blossoming out in pink tufted spikes and gives its pleasant pungent odor to the Creek bottoms.

Arrived at Phantom Ranch at 3 PM & began packing up to go to Pipe Creek tomorrow.

Warm and pleasant in the Canyon.

May 21 Packed up and left Phantom Ranch at 10 AM, crossed the suspension bridge and climbed the slope to the Tonto Plateau. Then around on the Indian Gardens trail to Pipe Creek where we camped in a little ranger cabin. Found the south side of Canyon very dry and flowers scarce except for the Agave utahensis which is in full flower on the Tonto and a few cactus, Opuntia engelmanni and bassilaris. Coleogyne ramosissima (Black brush) is the dominant bush of the Tonto clear up to the edge of the upper Sonoran where it almost meets the fringes of nut pine. There are four species of Baccharis also come up to Pipe Creek which is near the junction of Upper and Lower Sonoran zones.

May 22 Eppard Tips Creek valley near to where it jumps over the Red wall where Ostrya knowltoni is the abundant tree in the gulch. Higher up we can see dense strips of Douglas spruce and white fir on the two upper shelves of the rim.

Found an old horse of the mountain sheep and a few bones that are probably sheep bones. There are lots of old mineral pits and a good supply of century plants.

Two Rimosopsmophilus seen and a lot of rock squirrels.

Set 27 traps.

Rained hard for five minutes just at sundown and spoiled most of my traps

Cold in morning.

May 2 24, Caught 3 Pituophis penicillatus and two Natrix albiguls and another brown rattlesnake of the confluentis group.
Saw a lot of Anthophilus and an old and young Coopersharki.
A still, beautiful morning, rather warm day, no showers.
Rattlesnake just 3 feet long, not very large, but as large as they get. ♂. Iris silvery yellow; pupil in daylight a narrow line of black, vertical with nose slightly raised. In morning pupil much wider and vertically oval.
Stomach contained young rock squirrel about 6 inches long, tail and all, probably before eyes were open.
Snake skinned and saved for specimen.

May 25 Walked over to Inscription Garden, 2½ miles, and watched for birds and sized up things for collecting. No better than Pipe Creek if as good so did not set any traps.

The antelope are still here but poor and panting and not enjoying life. There are 7 old and 4 young of this year 3 does and four bucks, too many bucks as the old one spends all his time chasing the others away. He also chases away any dogs and once ran a bobcat down the trail clear to the edge of the Canyon. Both were running at full tilt.

The mother antelope have their young hidden until two or three weeks old, then bring them in.

Cactus in Canyon

Echinocactus lecontii

Arenus englmanni

Cereus multiceps upper Sonoran

Echinocereus

Mammalaria

Opuntia bassolaris
lower Sonoran

Opuntia arborescens subsp.

Cactus

Opuntia englmanni
light yellow flowers with greenish centers, long white spines

Opuntia
Deep red flowers, broad pads one long spine in a place

Opuntia
Pink flowers, pointed pads. one or two long spines. Not so large.

Opuntia
Dark yellow flowers, orange centers rounded pads, tall, erect plant, short tufts of brown spines, no very long spines.
Phantom & above Pipe Creek, Com.

Opuntia
Small, long white spines, pink flowers upper Sonoran.

Urocyon

Food as shown by pellets in Grand Canyon

Citellus grammurus – , teeth & fur & bones

Amospermophilus – ~~not sure~~ teeth

Eutamias – not sure,

Peromyscus , fur & bones & feet & teeth abun.

Neotoma " " " coll.

Bird feathers – in several

Snake skin & bones – in one

Seeds of hackberry – in one

Insects, beetles & others

May 27, Packed up and went up trail to top by way of Indian Gardens with two pack mules and 3 saddle mules!

Caught another beautiful Pennycrotlus shot another Ammospermophilus nai. Indian Gardens had caught one last night near our camp.

Saw 3 mule deer at Indian Gardens where they had just come down from El Tovar as they often do, stay a few days and return. Saw some of the other mule deer at the top.

The Antelope at Indian Gardens are in better shape than last year at the end of July but not very good. The old buck wears himself out chasing off the young bucks who keep out in the hills most of the time. There are two does, each with

two fawns born May 14 & 19 are still out in the brush but one of the mothers brought her two down the trail today nearly to the station. The other has hers out in the black brush on the Zonta mesa near where the trail goes down to the river in Garden Creek. She goes out to feed them once or twice a day, then comes back. Knute Scheffer, the keeper at Evelin Galdins has followed her and seen her feed the young and then leave them hidden a little way apart. He expects them to come in with her in a few days, when a week or two old. They are out about a mile. She spends a part of her time around the station eating alfalfa hay, rolled barley, bran

Newton says there are 17 mountain sheep — the most ever west of Indian Gardens and a few ewes along the trail occasionally.

Our guides (Howard) saw four "goats" he thought on the bench below the Bottle ~~Bunkstone~~, some 1500 feet down the ~~Bo~~ Indian Gardens trail this morning, probably ewes or young rams. We found an old sheep horn in the Canyon above Pipe Creek and many fragments of sheep bones, some of them charred, — in the old Indian caves below the cabin.

and salt & sugar. Has every found of sugar which she takes from a tin cup from Knutie's hand.

The other doe is of last years young and will not have a young this year. There are three other young bucks kept away by the old buck — 11 in all. Newton says the old buck will chase any dog and one day he came down the trail on a dead run after a bobcat and the cat was doing its best to keep out of reach of the buck.

The antilope eat mostly hay and grain but also all sorts of flowers and fruit and plants around the ranch. I could not see what they were eating outside.

May 28 to June 4 inclusive
Working at Grand Canyon
Bright Angel Lava & El Tovar.
Writing reports, trapping,
shipping specimens and working
the trap.

June 5. With Mr. Tillotson around
by Cameron, Marble Canyon Bridge
Houserock Valley to Jacobs Lake
and V.T. Ranch, 230 miles
Got in late and found Major
Goldman, Rotzebard, Rutledge,
and Mann of the Forest Service
and Musgrave and State game
warden Belese & Mr. Hart of
Arizona. They have been
here 3 days, going over the
same range I went over
10 days ago on the west
side of the Kaibab

D

Mapped life zones all the way around.

Country very dry this year and for flowers or green plants. No grass or feed for stock or game.

Saw the buffalo in Horsesock Valley.

Cattle dying along way & very poor.

Bison, about 75 or 80 head running at large in Horsehead Valley. With this year's calves about 90.

Hugh Anderson in charge of them, address Fredonia Arizona.

A good rally for antelope

June 4. Woke up at 4 A.M. on a beautiful bright morning with frost on the meadows.

Saw 75 deer close by, all in good condition and all but a few fawns and does in the brown summer coat. A few still retain ragged old light gray coats of winter pelage. The bucks have magnificent big heads.

Browsed on best patches of little clover, Claytonia and dandelion, the best and most abundant foods, and much eaten. Had also eaten some Sarcobatus and a very little Cogswellia nudicaulis.

The men reported over 200 in the meadows last evening and over 500 seen yesterday.

Drove to Horsehead Valley, then south to Crane and South Canyon and examined deer range, then back to camp for the night.

~~Then~~
At South Camp, where our last years hunting camp was located we found overgrazed conditions of Cliffrose, Juniper and other vegetation, also it is badly overgrazed all along the edge of the roadway. Numerous shed horns seen. Some fresh tracks of deer seen but no deer.

Came back to Crane Spring and shot in storeroom on floor

Saw four head goat of old Elm house, apparently Nyetinomus.

July 7, Hunting for buffalo
but found only a few
Came back to Jacobs Cabin
for lunch, then down ridge
to east overlooking Cave
Springs from the top.
Country much browsed off
and most of young pines, ash
and cedar damaged or killed.
All young aspen growth
gone and the oak & locust
Currant badly damaged.
Beds to V. T. Pots for
~~[illegible]~~ at night.
Counted 348 deer as we
came in
Saw 3 white tailed squirrels
and most antlerings.
Rabbits numerous in V. H.
2 & or 3 & or more.

June 8 - Evening grosbeaks numerous in aspens around T Hotel, eating capsules of half ripe aspen catkins a dozen or more of them in one bite at times. Chirping and making the buzzer note after the chirps but not trying to sing.

June 8 Went down to Scout Point then back by Indian Hollow and down Indian Creek Canyon to edge of Grand Canyon just east of Fishtail, Then back by Indian Canyon to Castle Springs just south of Big Springs and up Castle Canyon and over to Arrowhead Lakes, then across to the south west corner of Pleasant Park and back to V-T Ranch. Had supper and drove to Bright Angel Point for the night.

Mapped life zones and examined deer winter range and summer range and intermediate range where they have done most serious damage to young timber.

Covered about 100 miles

Saw 4 dead fawns, probably starved.

Counted 233 deer mostly in V T Park as we returned.
Mostly — red coat at bases of old bucks half grown, a foot wide or more.
I want to camp at end of Swelter Hollow, at Castle Springs, at Lookout Lakes and Crane lake. Also want to stop at Big Springs & see Robert Park & wife & get lots of notes
No flowers or seed on aspens except at V. T. Park where capsules half grown & much eaten by Evening Grosbeaks, Purple finches, Crossbills & Siskins.
The rangers shot 3 porcupines near Lookout Lakes. One examined was an old female giving milk
Much aspen fruit at Bright Angel Point

Plants eaten by deer

Cowania stansburyana, favorite winter food
Purshia tridentata, scarce but eagerly eaten
Fallugia paradoxa, much eaten
Cercocarpus intricatus, " "
" montanus
Rosa, much eaten
Ribes cereum, " "
Amelanchier utahensis, " "
" pallida, " "
Ceanothus fendleri, " "
" montanus, a little eaten
Juniperus utahensis, much eaten when necessary
Pinus edulis, a little eaten if necessary
" ponderosa, much eaten
Abies concolor, favorite conifer
Picea pungens, much eaten
" engelmanni
Pseudotsuga, some eaten
Populus aurea, favorite summer browse
Quercus gambeli, much eaten in places
Pseudocacia, much eaten, much killed.

Ephedra viridis, much eaten
" nevadensis, " "
" trifurca, " "
Artemisia tridentata, eaten and killed in places
" ~~arbuscula~~
Chrysothamnus, one is much eaten, others not
Eleagnus rotundifolia, somewhat eaten
Arctostaphylos pungens, a little eaten
Garrya, much relished
Rhus, some eaten
Rubus strigosus, rare but eagerly eaten
Symphoricarpos, extensively eaten
Cornus sericea, rare but eaten when available
Amelanchier canescens, some eaten, much eaten
Trifolium montanum, favorite summer food
Clotonia megacephala, favorite spring food
Taraxacum, " " "
Cryptantha tarayphis, some eaten
Sphaeralcea, a little eaten
Cogswellia, a little eaten
Callichortis, eagerly eaten
Alfillaria, much eaten
Lupinus, flowers & seed pods eaten
Polygonum, eagerly eaten.

Plants injured by deer

Juniperus scopulorum
Berberis fremonti
Chrysothamnus nauseosus, 2 species
Aster gutierrezia
Gnaphalium
Delphinium
Euphorbia
Grasses generally

June 9 At Bright Angel Point

Examined clover stand at Ranger Station & old station meadows. Found clover very thick and thrifty around station, scarce and poor in meadow.

Dandelions much eaten.

A little wild mountain clover in meadow being eaten. Also added red raspberry, Cornus & Garrya to list of deer foods.

Gave talk with lantern slides at Hotel in evening.

June 10. Started coast.
Canyon 8:30 AM; on
Peaches & Tillitson in Rattles
Aspens loaded with pointing
catkins, half ripe at the
cottons will be flying in
a couple weeks probably.
Pseudotsuga arizonica
in full blossom near Tunnel.
Flowers large & beautiful,
pale pink but not fragrant.
Lower down near Catalpa the
fuzzy pods are full grown.
Still I must get seeds when ripe.
Canyon very dry, especially in
Lower Lorraine gorge.
Cool & windy.

June 11 – 18

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